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18. THE FECUNDITY OF *HETEROPNUESTES FOSSILIS* (BLOCH)

(*With three text-figures*)

INTRODUCTION

Fecundity or the reproductive potential can be defined as the number of ova shed during a particular spawning season (Pillay 1954). The study of fecundity is important in the fishery exploitation, especially in freshwater fishes which are now bred artificially in impounded waters by injecting pituitary hormone. Since fecundity bears a definite relationship with total length, body-weight and ovary-weight of fishes,

its knowledge can be utilized for the selection of female breeders and thereafter for the estimation of survival of eggs also.

Heteropnuestes fossilis (Bloch) is a common freshwater fish. The mature specimens for investigation were collected from Killa Fish Farm at Cuttack (Orissa) during the years 1962-63. In all 35 mature ovaries were studied. The ovary of *H. fossilis* is brown in colour and the ova are green and round. The diameter of ova varies from 0·4545 mm. to 1·3635 mm. In a mature fish the ovary occupies about three-fourth of the body cavity. The ovaries from freshly killed specimens were preserved in 5% formalin for a few days. The formalin hardened ovaries were weighed after wiping them with a filter paper and from each ovary three samples of 1 gm. each from different regions were taken, teased on a slide and the mature ova thus liberated were counted. A mean of the three samples was taken for estimating the number of ova which was then computed for the whole ovary. In one fish the total number of ova of a complete ovary was counted for testing the accuracy of the method employed and gave a close approximation. The observed fecundity varied from 2,843 to 44,724 in fishes ranging from 164 mm. to 307 mm. in length examined during the present study. In *Clarius batrachus*, another catfish, the average number of ova is 11,612 approximately for a fish of average length 31·5 cm. and weight 251·6 gm. (Mookerjee & Mazumdar 1950).

The fecundity was studied in relation to three parameters viz. (1) Total length of fish (2) Body weight of fish and (3) Ovary weight. The method of least squares was followed for all the calculations.

Result and Discussion

A. *Fecundity—Total length relationship:*

Fig. 1 shows the relationship between fecundity and total length of fish. The fish were grouped in the range of 10 mm. and the equation followed was $F = CL^n$ where F, C and L represent the fecundity, a constant and the length respectively while n is an exponent showing the relation between the two variables. In *H. fossilis* the equation comes to be— $F = 10^{-6} \times 9647^{L^{2.65681}}$

This relationship seems to be of a cubic nature as indicated by the parabolic curve (Fig. 1) which means that the fecundity increases at the rate less than the third power of the total length (2·65681) as suggested by Simpson (1951).

The correlation-coefficient 'r' between the two parameters was 0·9569,

B. *Fecundity—Body weight relationship:*

The relationship between these two variables is linear as observed from the graph in Fig. 2. To consider this relationship the fishes were grouped in the range of 10 gm. and the equation followed was $F=a+bW$ where F is the fecundity and W is the mean body weight

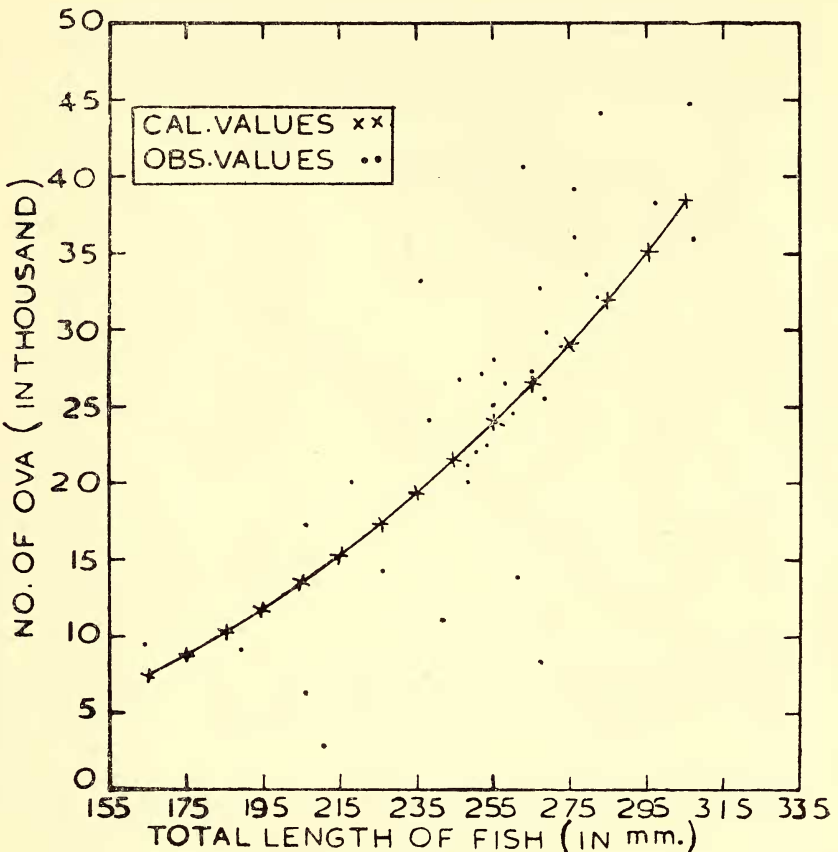

FIG. 1.

of fish in gm. A similar method was followed by Varghese (1961) while calculating the fecundity of *Raconda russeliana* (Gray). By substituting the values of the constants *a* and *b* the equation can be written as—

$F=1040{\cdot}49149+207{\cdot}27833\ W.$

The value of 'r' was found to be 0·96536

C. *Fecundity—Ovary weight relationship:*

In this case the ovary weights were grouped at an interval of

5 gm. The equation $F=a+bW'$ was used and after substituting the values of the constants the equation obtained was—

$F=4117{\cdot}7915+1298{\cdot}1000\ W'$.

The graph in Fig. 3 indicates a linear relationship similar to that obtained by Qasim & Qayyum (1963) in some freshwater fishes.

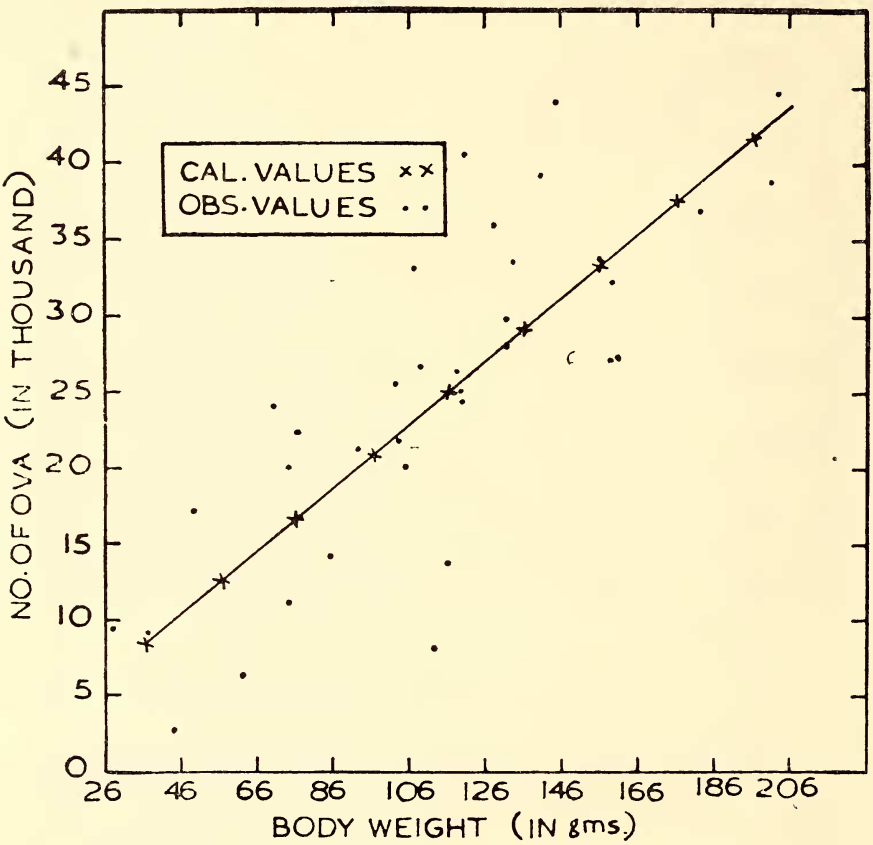

FIG. 2.

The value of 'r' was 0·9925.

In *H. fossilis*, therefore, the relationship of fecundity was found to be curvilinear with total length and linear with body weight and ovary weight for which the values of correlation coefficient 'r' were 0·9569, 0·96536 and 0·9925 respectively. It seems that ovary weight of fish is more accurate in estimating the fecundity than the other two parameters discussed above. However, it is not practicable to consider the ovary weight in live specimens, therefore, the body weight ('r'=0·96536)

could be taken as the next best index. Qasim & Qayyum (op. cit.) also drew the same conclusion.

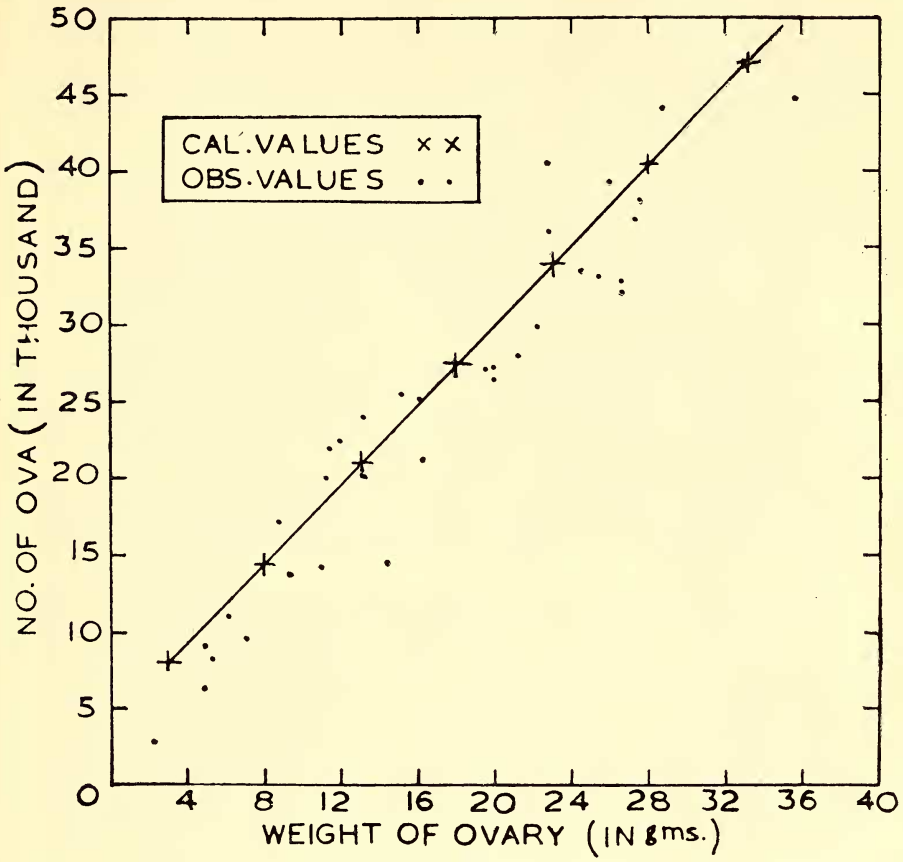

FIG. 3.

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19. OCCURRENCE OF THE SNAIL *LYMNAEA* (*GALBA*) *TRUNCATULA* (MÜLLER) (MOLLUSCA : PULMONATA) AT MALAD, BOMBAY CITY—A NEW RECORD FOR PENINSULAR INDIA

The pulmonate snail *Lymnaea* (*Galba*) *truncatula* (Müller) is a palaearctic species, distributed all over Europe including Iceland and extending through Asia to Kamchatka. Except Kashmir, it has not been reported from any other part of India.

The material studied consists of two examples of *L. truncatula* collected from S. K. P. A. Talaw at Malad, North Bombay (19° 12′N; 72° 50′E).

Although according to Hubendick (1951)[1] the distribution of this species in Africa seems to be the result of transportation by migrating birds, regarding the present record, further studies will be necessary to determine what factors are responsible for its occurrence at Malad, North-West Bombay. The present find is of interest as a new locality record for the species, being reported for the first time from Peninsular India, extending the southern limit of the range of the species in Asia to lat. 19° 12′N.

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